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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/522,074	07/08/2005	Darrell Sleep	P30,358USA	7594

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EXAMINER	
GUDIBANDE, SATYANARAYAN R	
ART UNIT	PAPER NUMBER
1654	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/19/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

TH

Office Action Summary	Application No.	Applicant(s)	
	10/522,074	SLEEP, DARRELL	
	Examiner	Art Unit	
	Satyanarayana R. Gudibande	1654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 February 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *56* is/are pending in the application.

4a) Of the above claim(s) *2,4,5,7,9,11-19 and 26-56* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,6,8,10 and 20-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/30/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of SEQ ID NO:28 as the species and election of group I invention in the reply filed on 2/220/07 is acknowledged. The traversal is on the ground(s) that the motif -X1-X2-X3-X4-X5- is not the technical feature of group I but it requires this peptide motif to be part of a leader sequence, which also comprises a pre sequence. Applicants' further state that the claims require a protein that is heterologous to the leader sequence and the totality of the technical features of the claims is a contribution over the art, groups I and II require these technical features and hence unity of invention exists. This is not found persuasive because applicants have not recited amino acid sequence information of neither the leader sequence, nor the pre or pro sequence as required by the inventions in groups I and II. In the absence of sequence information available, any sequence that possess the motif -X1-X2-X3-X4-X5- reads on the claims and hence the restriction requirement as required is proper.

Further, applicants argue that it would not be a serious burden for the office to examine groups I and II together. Applicants argue that the group II requires a pro sequence in addition to the structural features of group I. The fact that individual peptides are structurally distinct compounds and addition of structural features to the molecule promotes further distinction and more over, as aforementioned, the structural features of the leader sequence and pre or pro sequences have not been well recited in the claims. Hence the structural features of compounds recited are distinct and hence the restriction as required is still deemed proper and is therefore made FINAL.

The elected species SEQ ID NO: 28 has been found to be free of art. However, upon extending the search, prior art was found on SEQ ID NO: 1.

Claims 1-56 are pending.

Claims 2, 4, 5, 7, 9 and 11 have been withdrawn from further consideration as being drawn to non-elected species.

Claims 12-19 and 26-56 have been withdrawn from further consideration as being drawn to non-elected invention.

Claims 1,3, 6, 8, 10 and 20-25 are examined on the merit.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1 and 21-25 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 1 as recited encompasses any and all native polypeptide (protein) of nature. Claims 21-25 as recited encompasses again any and all native proteins and in particular human albumin (claim 23) and transferrin (claims 24 and 25). The protein sequence of serum albumin (bombina maxima blood serum, GenBank AAX82486, the sequence as shown below) exhibits the motif 'TILTA' in position 4-8 of the sequence and hence the polypeptide recited in claim is a product of nature.

1 MKW**TILTA**LL IISAESKNLY KRDSEPHIRF LGEVYKKVDT IDFRGLVLIT LAQHLQKCPF

61 EELAKQVEQI TTLAQACAAG ARHADCATPL ITLFLNRICA VPELSATYDW STECCAKSDP

121 ERHQCFRAHR NPAPGTHYKR PEPEELCESY KKNKEDVLAH YIYEVSRGHP VLYSPAVLGF

181 AYQFNGICSH CCEEEDKTTC FKDRMTQLKK ALHIVEVQQK ESCRILDNFG VRVLQALKLV

241 KISKKNPKAT FEVAQKLTSE VTHLNEDCCH GDMLECMIER MELTEHTCEH HEDISTKLKT

301 CCEKPLIERT HCIVNLENDD IPEDLPKKVT KFVEDPEVCK LFADKKDIFL AEFLYEYGRR

361 HPELSDQLLL RIAKGYEHQL EKCCELENFL ECLKDGEHVL ADAIKESTEL TEKDCAIQQK

421 LGDYLFQNVL LIRYTKKMPH VTTPSLIHIT KHMTEVGDKC CALPNTQKMP CAEGGLSLII

481 GEFCEMEKTH PINEHVKNCC WKSYSNRRNC FTNLGPDDSY VAPEITDDTF HFTEDLCTLP

541 EEELKNKKQG FIATLVKVKP HVTDELYGQI AVEFTKMREK CCAAEDHQAC FNAEEPILIE

601 HCKQLAA

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1,3, 6, 8, 10 and 20-25 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In the instant application, applicants acclaim a polypeptide comprising (i) a leader sequence, the leader sequence comprising (a) a secretion pre sequence, and (b) the following motif: -X1-X2-X3-X4-X5- where XI is phenylalanine, tryptophan, or tyrosine, X2 is isoleucine, leucine, valine, alanine or methionine, X3 is leucine, valine, alanine or methionine, X4 is serine or threonine and X5 is isoleucine, valine, alanine or methionine ; and (ii) a desired protein heterologous to the leader sequence.

The MPEP clearly states that the purpose of the written description is to ensure that the inventor had possession of invention as of the filing date of the application, of the subject matter later claimed by him. An applicant shows possession of the claimed invention by describing the claimed invention with all of its limitations using such descriptive means as words, structures, figures, diagrams, and formulas that fully set forth the claimed invention. Lockwood v. American Airlines, Inc., 107 F.3d 1565, 1572, 41 USPQ2d 1961, 1966 (Fed. Cir.1997). The MPEP lists factors that can be used to determine if sufficient evidence of possession has been furnished in the disclosure of the application. These include, "level of skill and knowledge in the art, partial structure, physical and/or chemical properties, functional characteristics alone or coupled with a known or disclosed correlation between structure and function, and the method of making the claimed invention. Disclosure of any combination of such identifying characteristics that distinguish the claimed invention from other materials and would lead one of skill in the art to the conclusion that the applicant was in possession of the claimed invention is sufficient" MPEP 2163.

The claims as recited, encompasses not just the peptide motif defined by $-X_1-X_2-X_3-X_4-X_5-$ but it requires the presence of a leader sequence, a secretion pre sequence and a protein heterologous to the leader sequence. The claim does not recite the nature of the 'leader sequence', 'pre sequence' or 'the protein heterologous to leader sequence' in terms of the amino acid sequences that would properly define each of these different peptides that constitute the claimed polypeptide sequence. The claims do not adequately provide structural characteristics of 'leader sequence', 'the pre sequence' or 'the protein that is heterologous to the leader sequence' that make up the polypeptide that is claimed in the instant invention. The specification does not

provide adequate support to the claims as recited in describing the instantly claimed invention wherein individual components (such as leader sequence, pre sequence and protein that is heterologous) of the claimed polypeptide. Recitation of terms such as 'leader sequence', 'pre sequence' and 'protein heterologous to' without properly identifying the structural characteristics of these molecules with required sequence identification numbers (SEQ ID Nos) or structural characteristics lead to lack of written description according to 35 USC 112 first paragraph.

The specification on page 7, lines 10-19 states that, "[T]he desired protein is heterologous to the leader sequence. In other words, the polypeptide of the first aspect of the present invention does not include naturally occurring proteins that have, in their leader sequences, the motif -X1-Xl-X3-X4-X5- as defined above. In a preferred embodiment, the polypeptide of the first aspect of the present invention does not include any naturally occurring protein that has the motif -X1-Xl-X3-X4-X5- as defined above at any position. In this context, the term "naturally occurring" refers to proteins encoded by naturally occurring organisms that have not been modified by recombinant technology, site-directed mutagenesis or equivalent artificial techniques that requires human intervention". However, it is unclear as to what portion of the naturally occurring protein is 'leader sequence' or 'pre sequence' and what potion of the molecule corresponds to 'protein that s heterologous to the leader sequence'. As in the above example of serum albumin (bombina maxima blood serum, GenBank AAX82486), the pentapeptide motif occur at the N-terminal end in position 4-8 amino acid residue. According to the specification, only a portion of the cited albumin protein is the polypeptide recited in the instant invention, as the motif as represented by the **pentapeptide** or a **part of the motif** as per claim 20 is not a part of the desired polypeptide. However, the desired polypeptide comprises of the 'leader sequence, 'pre

sequence' and 'a desired protein heterologous to the leader sequence'. Therefore, the claims as recited suffer from lack of written description in clearly describing the invention to one skilled in the art. Again, the claims as recited encompasses any and all naturally occurring proteins (polypeptides). The fact that the claim as recited encompass any and all natural polypeptide combined with lack of description in the specification of the individual components such as 'leader sequence', 'pre sequence' and 'protein heterologous to the leader sequence' that constitute each of the desired polypeptide clearly indicates that to one skilled in the relevant art that the inventor(s), at the time the application was filed, may not have had possession of the claimed invention.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 6, 8, 10, 20-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Sleep, et al., 1990, Biotechnology, 8, 42-46.

Applicants claim a polypeptide comprising (i) a leader sequence, the leader sequence comprising (a) a secretion pre sequence, and (b) the following motif: -X1-X2-X3-X4-X5- where XI is phenylalanine, tryptophan, or tyrosine, X2 is isoleucine, leucine, valine, alanine or methionine, X3 is leucine, valine, alanine or methionine, X4 is serine or threonine and X5 is

isoleucine, valine, alanine or methionine ; and (ii) a desired protein heterologous to the leader sequence.

Examiner's search found the motif 'TIASI' in sequence A of the cited reference (Seq ID NO: 1 of the sequence listing, that discloses the sequence as follows),

```
<210>   1
<211>   5
<212>   PRT
<213>   Artificial Sequence

<220>
<223>   Synthetic polypeptide leader sequence

<220>
<221>   MISC_FEATURE
<222>   1
<223>   CAN BE EITHER Phe OR Trp OR Tyr

<220>
<221>   MISC_FEATURE
<222>   2
<223>   CAN BE EITHER Ile OR Leu OR Val OR Ala OR Met

<220>
<221>   MISC_FEATURE
<222>   3
<223>   CAN BE EITHER Leu OR Val OR Ala OR Met

<220>
<221>   MISC_FEATURE
<222>   4
<223>   CAN BE EITHER Ser OR Thr

<220>
<221>   MISC_FEATURE
<222>   5
<223>   CAN BE EITHER Ile OR Val OR Ala OR Met

<400>   1
Xaa Xaa Xaa Xaa Xaa
1               5
```

The disclosure of the sequence motif TIASI (page 43, column 1) of the cited reference as a part of sequence A meets the limitations of claims 1, 3, 6, 8, 10 and 20. The reference also discloses the construction of a vector comprising of secretory leader sequences for the expression of mature human serum albumin (HSA) from yeast (page 42, column 2, bridging paragraph to column 1 of page 43). This meets the limitations of claims 22 and 23.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Satyanarayana R. Gudibande whose telephone number is 571-272-8146. The examiner can normally be reached on M-F 8-4.30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cecilia Tsang can be reached on 571-272-0562. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Satyanarayana R. Gudibande, Ph.D.
Art Unit 1654

4/14/07
ANISH GUPTA
PRIMARY EXAMINER